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14

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,558	06/28/2001	William Downs	6013D	7270

7590 03/25/2004
Gayle L. Hamilton
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EXAMINER

TRAN, HIEN THI

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/894,558

Applicant(s)

DOWNS ET AL.

Examiner

Hien Tran

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-33 is/are pending in the application.
- 4a) Of the above claim(s) 33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 16-32 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 16-33 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/28/01</u> . | 6) <input type="checkbox"/> Other: ____. |

Art Unit: 1764

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 16-32, drawn to an apparatus, classified in class 422, subclass 171.
 - II. Claim 33, drawn to a method, classified in class 423, subclass 210+.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the apparatus as claimed can be used to practice another and materially different process, such as the process of manufacturing a chemical compound, or a process for manufacturing sulfuric acid via reaction between gaseous sulfur trioxide and water/steam.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, recognized divergent subject matter and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Mr. Robert Baraona on 10/29/01, a provisional election was made without traverse to prosecute the invention of group I, claims 16-32.

Affirmation of this election must be made by applicant in replying to this Office action. Claim 33 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Art Unit: 1764

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Drawings

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: "160" (Fig. 6). A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

7. The drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the drawings to comply with CFR 1.84(p)(5), e.g. they should include the reference sign(s) mentioned in the specification and vice versa.

Specification

8. The disclosure is objected to because of the following informalities:

On page 6, line 21 --or wet scrubber absorber module-- should be inserted before "30" for consistency and clarity (note line 19).

On page 7, line 22 --or injection apparatus-- should be inserted before "76" (note line 15); in line 25 --or liquid section-- should be inserted before "54" (note line 13).

Art Unit: 1764

On page 9, line 3 --or dry scrubber-- should be inserted before "150" (note line 4).; in line 8 --or coal-- should be inserted before "20" (note page 6, line 13).

Appropriate correction is required.

9. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

10. Claims 22, 31-32 are objected to because of the following informalities:

In claim 22, line 3 --Kraft-- should be inserted before "green liquor" for clarity. See claims 31-32 likewise.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claims 16-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martinelli et al (5,599,508) in view of JP 49-64557 and Venemark (3,331,732).

Martinelli et al discloses a conventional process and apparatus for removing impurities including heavy metals, out of various exhaust gas (col. 2, line 63 to col. 3, line 7), comprising:

passing the exhaust gas through an electrostatic precipitator 16 and then to a wet scrubber, which evidently uses a lime based scrubbing liquor to remove the sulfur dioxide out of the exhaust gas to produce a scrubbed gas and a scrubbing liquor containing calcium sulfite;

collecting the calcium sulfite containing scrub liquor in a collection sump at the bottom of the wet scrubber;

injecting oxidation air into the calcium sulfite containing scrub liquor to effect an oxidation of at least a portion of the calcium sulfite into calcium sulfate;

bleeding off a portion of the calcium sulfite/calcium sulfate containing scrub liquor and working it up to form gypsum, while recycling the remaining calcium sulfite/calcium sulfate/lime based scrubbing agent back to the discharge nozzle of the wet scrubber (drawing; col. 3, line 8 to col. 4, line 46).

The difference between the instant claims and the Martinelli patent is that the instant claims call for provision of means for injecting hydrogen sulfide into the exhaust gas to react with and remove mercury.

However, JP 49-64557 discloses the use of hydrogen sulfide to react with a remove mercury out of an exhaust gas.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Martinelli et al by including means for

Art Unit: 1764

discharging hydrogen sulfide into the exhaust gas, as required in the instant claims, because of the expected advantage of the hydrogen sulfide to react with and convert the "heavy metals" mentioned in col. 2, line 65 in the Martinelli et al apparatus into a solid form (i.e. the HgS mentioned in the abstract of the JP '557) as fairly suggested in the teaching "HgS, which is separated from the waste gas by dust collectors." as taught in the abstract of JP '557.

The difference between the instant claims and the JP '557 is that the instant claims set forth that the source of hydrogen sulfide is from green liquor.

However, Venemark discloses the introduction of carbon dioxide into green liquor to generate hydrogen sulfide gas (col. 1, lines 31-38).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select green liquor as the source of hydrogen sulfide in the modified apparatus of Martinelli, because green liquor is a known and conventional source for generating hydrogen sulfide gas as evidenced by Venemark.

Selecting any known element, e.g. air foils, pipes, etc, for injecting the agent into the exhaust gas is within the purview of one having ordinary skill in the art during routine experimentation and optimization of the system thereof.

Double Patenting

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground

Art Unit: 1764

provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

15. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

16. Claims 17-21, 28-30 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-5, 13-15 of prior U.S. Patent No. 6,284,199. This is a double patenting rejection.

17. Claims 16, 22-27, 31-32 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 6,284,199.

Although the conflicting claims are not identical, they are not patentably distinct from each other because they are directed to the same conceptual invention.

Conclusion

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is (571) 272-1454. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1764

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HT
March 18, 2004

Hien Tran
Hien Tran
Primary Examiner
Art Unit 1764